

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

SAN FRANCISCO BAY REGION

ORDER NO. 86-100

WASTE DISCHARGE REQUIREMENTS
(SITE CLEANUP REQUIREMENTS) FOR:

BECTION-DICKINSON AND COMPANY
LOS GATOS
SANTA CLARA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region, (hereinafter called the Board) finds that:

1. Becton-Dickinson, hereinafter called the discharger, operates and owns a facility that manufactures disposable medical gloves at 14300 Winchester Boulevard in the City of Los Gatos (Attachment 1). The facility was built in 1962 on land previously used for agricultural purposes.
2. Chemicals handled and stored on the site include different types of phthalates and stoddard solvent, a petroleum naphtha. These chemicals are used in the glove manufacturing process. Drums containing phthalates had been stored in an unpaved drum storage area. Phthalates are now stored in above ground tanks. Stoddard solvent had been stored in a 500-gallon under ground storage tank and is now stored in drums in a shed overlying a concrete pad. Waste solvents are collected in drums and transported to a Class I waste disposal site.
3. The geology underlying the facility consists of alluvium composed of semi-indurated and poorly sorted deposits of gravelly sand, sandy silts and clays. Shallow deposits from the ground surface to about 20 feet in depth consist primarily of gravels and smaller amounts of sand and silt. The deeper deposits down to 120 feet are composed of sandy silts and sandy clays with weathered sands and gravels.
4. On February 11, 1983, the discharger discovered 91,000 ppb of stoddard solvent in soil and 5,000 ppb stoddard solvent in groundwater from a monitoring well installed during closure of a product storage tank. In October 1983, the discharger installed three monitoring wells and three soil borings near the underground solvent tank. Chemical analyses indicated that the soil in the well boring contained up to 91,000 ppb total hydrocarbons and 19,000 ppb stoddard solvent. The groundwater was found to contain up to 8,800 ppb phthalates, 6,000 ppb stoddard solvent and 14,000 ppb total hydrocarbons.
5. One municipal and seven private water wells are known to exist as active or potentially active wells within one mile of the site. The nearest drinking water supply well is about 1600 feet downgradient of the site. The groundwater from these wells has not yet been sampled or analyzed for phthalates or stoddard solvent, but will be accomplished as part of this Order.

6. The discharger has installed ten monitoring wells to aid in plume characterization. Currently, eight on-site wells and one off-site well are monitored for phthalates and stoddard solvent. One well was destroyed as a result of tank and soil removal. The plume of phthalates and stoddard solvent in the groundwater extends about 500 feet (45 ppb of diethyl phthalate (DEP) in peripheral well W-6) northwesterly and laterally from the chemical storage area and is at least 120 feet deep (28.9 ppb bis (2-ethylhexyl) phthalate (DEHP) present in peripheral well W-5).
7. Activities to prevent further solvent migration from the source area have included removal of the leaking tank and of contaminated soil surrounding the tank. In May 1983 the discharger took the 500-gallon tank out of service and in September 1985 the 500-gallon tank was removed. The discharger has removed approximately 300 yd³ of soil to a depth of approximately 23 feet from around the former waste tank. The discharger has already spent a total of about \$350,000 which includes \$150,000 for soil and tank removal, and \$200,000 for plume characterization. The discharger has also spent \$210,000 to upgrade the facility to prevent future releases.
8. Groundwater at the site currently contains from nondetectable to 45 ppb of phthalates and nondetectable concentrations of stoddard solvent. Department of Health Services (DHS) has not determined drinking water action levels for phthalates or stoddard solvent, yet has determined drinking water action levels for benzene (0.70 ppb), toluene (100.00 ppb), and xylenes (620.00 ppb) which are dissolvable fractions of stoddard solvent. With the exception of 2 ppb of toluene detected in one on-site monitoring well sample, these aromatics were not detected in groundwater samples from the Becton Dickinson site.
9. Different types of phthalate esters have been detected at the site, each type with its own toxicity characteristics. Since Department of Health Services has not recommended drinking water action levels for any phthalate esters or for stoddard solvent, various sources of health criteria guidance for drinking water must be consulted to assess the potential impact on beneficial uses of the site's groundwater. The EPA National Advisory Water Quality Criteria for drinking water establishes a range of 15,000 to 350,000 ppb for four of the phthalates. However, an EPA Region IX health advisory recommends 38.5 ppb and 210 ppb for two of the phthalates. As a result of its toxicological literature review, the discharger has proposed drinking water action level concentrations of 350 to 650 ppb for three phthalates and 3,750 ppb for stoddard solvent. Department of Health Services (DHS) has reviewed the discharger's proposed action levels and found that the levels appear to be justified for drinking water based on available data; however, these levels may need to be modified if and when DHS recommends action levels for these compounds.
10. The discharger has submitted an interim remedial cleanup alternatives evaluation. The discharger recommends that additional remedial activities at the site be limited to groundwater monitoring, because the current pollutant concentrations are below suggested drinking water action levels or existing health criteria. Based on the discharger's cost and pollutant removal estimates for groundwater extraction and

treatment Board staff determined that the pollutant concentrations would be reduced by somewhere between five and seven percent at a cost of somewhere between \$280,000 and \$400,000 over the first year of operation. Five years of extraction system operation would reduce the concentrations by about 23 percent and would cost somewhere between \$800,000 and \$1,120,000 based on the discharger's cost estimates. These rough cost estimates are similar to actual groundwater extraction and treatment costs incurred at other sites of groundwater pollution cleanup. Complete removal of the pollutants would cost about \$23,500,000 and would require the demolition of part of a building, which would result in a loss in the discharger's manufacturing operation. Continued interim monitoring, costing about \$160,000 for 5 years of monitoring, will provide information on changes in the plume characteristics and information needed to determine an appropriate final remedy for the site.

11. A monitoring plan strategy for five years is acceptable in the interim at this site given the minimal risk of human exposure to low pollutant concentrations. These current pollutant concentrations are considered to be low relative to available drinking water and health criteria as discussed in Finding 7. A detailed evaluation of the reasons for concentration increases and an evaluation of alternative hydraulic control and cleanup measures will be submitted, if concentrations are found to increase to or above values in Specification 3 (Table I). This specification is based on best engineering judgment regarding various factors. One factor considered was that no pollutant concentration exceeding twenty-five percent of the drinking water health criteria was considered acceptable during the interim monitoring period. Another factor considered in establishing pollutant concentrations was the possible presence of low background levels of some of the pollutants. The Board will decide whether further interim and/or final active cleanup measures beyond those already completed shall be implemented at this site based, to a significant degree on the information developed pursuant to this Order. The discharger has estimated that groundwater travel time from the release source area to the plume periphery would be five years. Therefore, monitoring for five years would help determine the effects on pollutant migration due to groundwater flow.
12. At the request of the Regional Board staff, the discharger filed a report of waste discharge to the Regional Board on January 2, 1986 for this release of solvents.
13. The Regional Board adopted a revised Water Quality Control Plan for the San Francisco Bay Region (Basin Plan) on July 21, 1982. The Basin Plan contains water quality objectives and beneficial uses for South San Francisco Bay and contiguous surface and groundwaters.
14. The beneficial uses of the groundwaters are:
 - municipal and domestic water supply
 - industrial service and process water supply
 - agricultural water supply
15. This project constitutes a minor modification to land and such

activity is thereby exempt from the provisions of the California Environmental Quality Act (CEQA) in accordance with Section 15304 of the Resources Agency Guidelines.

16. The Board has notified the discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for implementing remedial measures and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
17. The Board, in a public meeting, heard and considered all comments pertaining to the Waste Discharge Requirements.

IT IS HEREBY ORDERED, that the discharger, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, shall comply with the following:

A. Prohibitions

1. The discharge of wastes or hazardous materials in a manner which will degrade water quality or affect the beneficial uses of waters of the State is prohibited.
2. Further significant migration of pollutants through subsurface transport to waters of the State is prohibited.
3. Activities associated with the subsurface investigation and cleanup which will cause significant adverse migration of pollutants or adversely spread any pollutants from other sites is prohibited.

B. Specifications

1. The storage, handling, treatment, or disposal of polluted soil or groundwater shall not create a nuisance as defined in Section 13050(m) of the California Water Code.
2. The discharger shall continue to conduct monitoring activities to define the local hydrogeological conditions and determine changes in pollutant concentrations. Should monitoring results show evidence of significant plume migration, additional plume characterization may be required as determined by the Executive Officer.
3. Should any pollutant concentration in any peripheral well, in both the lateral and vertical direction, equal or exceed its Table I concentration, the discharger shall evaluate the reasons for the increase, evaluate alternative interim active hydraulic containment and cleanup plans in comparison with a continued monitoring alternative, and propose an appropriate response. Pollutant concentrations will be determined to equal or exceed Table I concentrations based on the analytical results of the median of three or more consecutive rounds of sampling within a 30 day period.

TABLE I

<u>Pollutant</u>	<u>Concentration (ppb)</u>
Stoddard solvent	25
Benzyl butyl phthalate	10
Bis (2-ethylhexyl) phthalate	52
Di-n-butyl phthalate	10
Di-n-octyl phthalate	13
Diethyl phthalate	87
Dimethyl phthalate	10
Xylene	10
Benzene	0.2
Toluene	20

C. Provisions

1. The discharger shall submit to the Board technical reports on self-monitoring work performed according to a program approved by the Executive Officer.
2. All samples shall be analyzed by State certified laboratories using approved EPA methods for the type of analysis to be performed. All laboratories shall maintain quality assurance/quality control records for Board review.
3. In order to comply with Prohibitions 1, 2 and Specification 3, the discharger shall complete the following tasks and submit technical reports documenting compliance according to the following time schedule for the areas on and off site.

<u>TASKS</u>	<u>COMPLETION DATES</u>
a. Submit a technical report which proposes water supply well sampling and groundwater analysis.	December 19, 1986
b. Submit a technical report documenting results of implementation of Task 3.a.	January 30, 1987
c. Submit a technical report acceptable to the Executive Officer which contains existing pump test data, an interpretation of the data, and a proposal for additional tests, if needed to determine the hydrogeological characteristics of the site.	March 27, 1987

- d. Submit a technical report acceptable to the Executive Officer which evaluates the reasons for concentration increases in peripheral wells, evaluates the costs, efficiency and benefits of active hydraulic cleanup and containment measures in comparison with a continued monitoring alternative, and proposes an appropriate response. 120 days after concentration increase confirmed as provided in Specification 3.
 - e. Submit a technical report which documents the completion of construction and implementation of the cleanup plan in Task 3.c. which will be implemented should pollutant concentrations increase in peripheral wells provided in Specification 3. This technical report must be acceptable to the Executive Officer. 240 days after the Board determines whether additional active measures are appropriate for this site.
4. In order to comply with Prohibition 1, the following information will be submitted by the discharger in technical reports acceptable to the Executive Officer for Board consideration according to the following time schedule.

TASK

COMPLETION DATE

Submit a technical report containing an evaluation of the effectiveness of the interim monitoring and/or active interim remedial cleanup plan, an evaluation of alternative final remedial measures and a recommendation on which additional measures if any should be implemented.


November 1, 1991

The technical report's evaluation of final remedial measures will include a projection of each measure's cost, effectiveness, benefits, and impact on public health and welfare and the environment and will be based upon Subpart F of the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR Part 300) and upon Section 25356.1 (c) of the California Health and Safety Code.

5. The dischargers shall permit the Board or its authorized representative, in accordance with Section 13267(c) of the California Water Code:
 - a. Entry upon premises in which any organic solvent sources exist, or may potentially exist, or in which any required records are kept.
 - b. Access to copy any records required to be kept under terms and conditions of this Order.
 - c. Inspection of any monitoring equipment or methods required by this Order.

- d. Sampling of any groundwater or soil which is accessible, or may become accessible as part of any investigation or remedial action program, to the dischargers.
6. The dischargers shall maintain in good working order and operate, as efficiently as possible, any facility or control system installed to achieve compliance with the requirements of this Order.
7. All hydrogeological plans, specifications, reports, and documents shall be signed and/or stamped with the seal of a registered geologist, engineering geologist, or professional engineer.
8. The dischargers shall file a report on any changes in site occupancy and ownership associated with the facility described in this Order.
7. The Board will review this Order periodically and may revise the requirements when necessary. Final remedial measures limits shall be established by Board action once compliance with Provisions C.3, C.4 and C.5 are achieved.

I, Roger B. James, Executive Officer, do hereby certify the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on December 17, 1986.


ROGER B. JAMES
Executive Officer

Attachment: Site Map

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

BECTON-DICKINSON AND COMPANY
SELF-MONITORING PROGRAM

A. GENERAL

Reporting responsibilities of waste dischargers are specified in Sections 13225(a), 13267(b), 13268, 13383, and 13387(b) of the California Water Code and this Regional Board's Resolution No. 73-16.

The principal purposes of a monitoring program by a waste discharger, also referred to as self-monitoring program, are: (1) to document compliance with waste discharge requirements and prohibitions established by this Regional Board, (2) to facilitate self-policing by the waste discharger in the prevention and abatement of pollution arising from waste discharge, (3) to develop or assist in the development of effluent or other limitations, discharger prohibitions national standards of performance, pretreatment and toxicity standards, and other standards, and (4) to prepare water and wastewater quality inventories.

B. SAMPLING AND ANALYTICAL METHODS

Sample collection, storage, and analyses shall be performed according to the latest edition of Standard Methods for the Examination of Water and Wastewater prepared and published jointly by the American Public Health Association, American Water Works Association, and Water Pollution Control Federation, or other methods approved and specified by the Executive Officer of this Regional Board.

C. REPORTS TO BE FILED WITH THE REGIONAL BOARD

1. Violations of Requirements

In the event the discharger is unable to comply with the conditions of the waste discharge requirements and prohibitions due to:

- (a) maintenance work, power failures, or breakdown of waste treatment equipment, or
- (b) accidents caused by human error or negligence, or
- (c) other causes such as acts of nature,
- (d) poor operation or inadequate system design,

The discharger shall notify the Regional Board office by telephone as soon as he or his agents have knowledge of the incident and confirm this notification in writing within two weeks of the telephone notification. The written report shall include pertinent information explaining reasons for the noncompliance and shall indicate what steps were taken to prevent the problem from recurring.

The discharger shall file a written technical report at least 15 days prior to advertising for bid on any construction project which would cause or aggravate the discharge of waste in violation of requirements; said report shall describe the nature, costs and scheduling of all action necessary to preclude such discharge.

In addition, if the noncompliance caused by items (a), (b), (c) or (d) above is with respect to any of the effluent limits, the waste discharger shall promptly accelerate his monitoring program to collect and analyze at least three samples within 30 days of noncompliance or as required by the Board's Executive Officer for those constituents which have been violated. Such analysis shall continue until such time as the effluent limits have been attained, or until such time as the Executive Officer determines to be appropriate. The results of such monitoring shall be included in the regular Self-Monitoring Report.

2. Bypass Reports

Bypassing reporting shall be an integral part of regular monitoring program reporting. A report on bypassing of untreated units shall be made which will include cause, time and date, duration and estimated volume bypassed, method used in estimating volume, and persons and agencies notified. Notification to the Regional Board shall be made immediately by telephone (415-464-1255), followed by a written account within 15 days.

3. Self -Monitoring Reports

a. Reporting Period:

Written reports shall be filed regularly for each quarter by the thirtieth of the following month.

b. Letter of Transmittal:

A letter transmitting self-monitoring reports shall accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period and actions taken or planned for correcting any requirement violation. If the discharger has previously submitted a detailed time schedule for correcting requirement violations, a reference to this correspondence will be satisfactory. Monitoring reports and the letter transmitting reports shall be signed by either a principal executive officer or his duly authorized employee. The letter shall contain a statement by the official, under penalty of perjury, that to the best of the signer's knowledge the report is true and correct.

c. Data Results:

- (1) Results from each required analysis and observation shall be submitted in the quarterly self-monitoring regular reports. Results shall also be submitted for any additional analyses performed by the dischargers at the specific request of the Board for parameters for which effluent limits have been established and provided to the dischargers by the Board.
- (2) The report shall include a discussion of unexpected operational changes which could affect performance of the treatment system, such as flow fluctuations, maintenance shutdown, etc.
- (3) The report shall also include a table identifying by method number the analytical procedures used for analyses. Any special methods shall be identified and should have prior approval of the Board's Executive Officer.
- (4) Lab results should be copied and submitted as an appendix to the regular report.
- (5) A map shall accompany the report, showing sampling locations and flow path of receiving waters.

- (6) The regular report shall include an annual waste summary by month for the current year for each parameter of the attached Table I. The annual report for December shall also include minimum, maximum, median and average for the year.

D. DESCRIPTION OF SAMPLING STATIONS

SURFACE WATER

U/S 100 FT. upstream of South Property line/Los Gatos Creek Intersection

D/S 50 FT. Downstream of Northeasterly property line/Los Gatos Creek intersection

GROUNDWATER

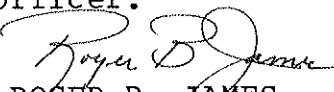
<u>Station</u>	<u>Description</u>
Well Nos. W-3, W-4, W-5, W-6, W-7, W-9, W-10	Points of the periphery of the pollutant plume.

E. SCHEDULE OF SAMPLING AND ANALYSIS

The schedule of sampling and analysis shall be that given as Table I.

I, Roger B. James, Executive Officer, hereby certify that the foregoing Self-Monitoring Program:

1. Has been developed in accordance with the procedure set forth in this Regional Board's Resolution No. 73-16 in order to obtain data and document compliance with waste discharge requirements established in Regional Board Order No. 86-100.
2. Is effective on the date shown below.
3. May be reviewed at any time subsequent to the effective date upon written notice from the Executive Officer or request from the dischargers and revisions will be ordered by the Executive Officer.


ROGER B. JAMES
Executive Officer

Effective Date: December 18, 1986

SCHEDULE FOR SAMPLING, MEASUREMENTS, AND ANALYSIS

[illegible]

LEGEND FOR TABLE

* At least three samples will be collected and analyzed within 30 days of knowledge of a pollutant concentration which is equal to or above its value specified in Order No. , Specification 3, Table I.

G= grab sample

D= once each day

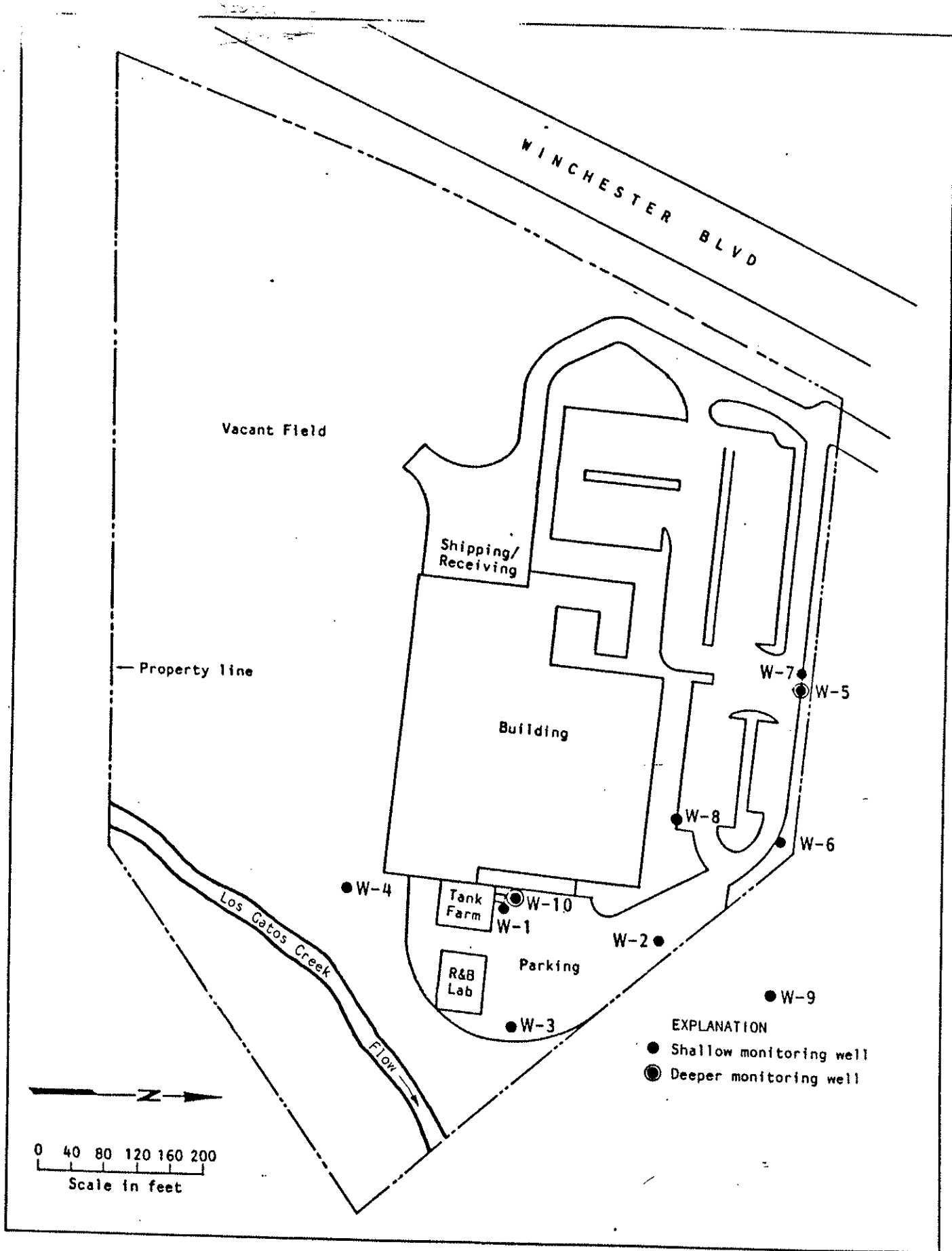
M= once each month

Q= quarterly, once in March, June, September and December

M/Q= monthly for six months at startup of operation; reduced to quarterly thereafter

A= once each year

Q/S= quarterly for six months from startup of operation; reduced to semiannual thereafter



BECTON-DICKINSON
MAP I